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SYNOPSIS OF NORTH-AMERICAN INVERTEBRATES.

X. THE OXYRHYNCHOUS AND OXYSTOMATOUS CRABS OF NORTH AMERICA.

MARY J. RATHBUN.

THE Oxyrhyncha include the large family of Maiidæ, or "spider crabs," so called on account of their slender legs. The body is usually narrow in front, sometimes suborbicular, but always with a beak or rostrum, as in the common "spiders" (Libinia) of the Atlantic coast. The Maiidæ are all provided with numbers of hairs, either hook-shaped or straight, varying in form and arrangement in the different genera and species. In order to conceal themselves from enemies these crabs cover their backs with algæ and sedentary animals, as sponges, tunicates, and bryozoans, which are held fast by the hairs and live and grow until their host is unrecognizable. This is notably so in *Oregonia gracilis*. Some species, as those of Collodes, are covered with slimy adherent mud.

The Parthenopidæ, the second and smaller division of the Oxyrhyncha, are easily distinguished by their broad, triangular carapace, very long, usually trigonal chelipeds, and short, delicate walking legs. They often resemble fragments of stone with sharp angles, or with eroded or nodular surfaces.

The Oxystomata comprise several families widely different in their general appearance. Of the Calappidæ the best known are the species of Calappa, "box crabs," or "shamefaced crabs," from the chelipeds which are large and of unusual shape, with cockscomb-like crests on the upper margin of the hands, and which in flexion are pressed tightly against the inferior surface of the carapace like a shield. This arrangement is said to protect from attack any morsels of food they may be devouring.

The Calappa lives usually on sandy shores, into which it is in the habit of burrowing.

Of the Matutidæ, which are sparsely represented in North America, the species of *Hepatus* are large and strikingly colored. They differ from Calappa in the smaller claws and in the narrower posterior portion of the shell. *Hepatus epheliticus* is known on the Gulf coast as "Dolly Varden."

The Leucosiidæ are generally distinguished by their globular carapace, long claws, and comparatively small walking feet. The largest and most conspicuous North-American species are the *Persephona punctata*, or "speckled spider," of the Atlantic and Gulf coasts, and *Randallia ornata* of the Pacific coast.

The Dorippidæ are marked by the reduction of the last two pairs of feet, which are raised on the dorsal surface of the carapace. The first two pairs of walking legs are long, enabling the crab to run fast.

In the key which follows, the same terms are used to indicate distribution as in No. VII of these synopses; and, as in that number, many of the definitions have been taken from the works of Drs. Stebbing and Alcock.

TRIBE OXYRHYNCHA, OR MAIOIDEA.

Carapace narrowed anteriorly and rostrate, with the hepatic regions small, the branchial large. Epistome generally large. Buccal frame quadrate, with anterior margin straight. Nine pairs of branchiæ, with the efferent channels opening at the sides of the endostome. The afferent channels open behind the pterygostomian regions, in front of the bases of the chelipeds. First antennæ longitudinally folded. Third maxillipeds with the fifth joint articulated at the apex or at the front inner angle of the fourth. The genital organs of the male are inserted at the bases of the last pair of trunk legs.

KEY TO THE FAMILIES OF THE TRIBE OXYRHYNCHA.

- A. Basal joint of antennæ well developed. Chelipeds not a great deal longer than the other legs. MAIIDÆ Leach
- A'. Basal joint of antennæ very small, and imbedded between the front and the floor of the orbit. Chelipeds a great deal longer and more massive than the other legs

PARTHENOPIDÆ Milne-Edwards, White

KEY TO THE GENERA OF THE FAMILY MAIIDÆ.

- A.* Basal joint of antennæ extremely slender throughout its length and usually long. Eyes without orbits and not concealed.
- B.* Carapace elongate, narrowed in front. External maxillipeds somewhat pediform, with the palp large and coarse, and the merus often narrower than the ischium. Basal joint of antennæ usually subcylindrical.
- C.* Rostrum extremely long. Dactyli of ambulatory legs longer than the propodi.
 - D.* Carapace smooth, even above. Antennæ concealed beneath the rostrum *Stenorynchus*
 - D'.* Carapace uneven above. Antennæ long, flagellum exposed *Metoporphaphis*
- C'.* Rostrum short. Dactyli of ambulatory legs shorter than the propodi *Podochela*
- B'.* Carapace usually subtriangular. External maxillipeds with the merus at least as broad as the ischium, and the palp small. Basal joint of antennæ flattened or concave ventrally.
- C.* Rostrum simple, or with two short spines or lobes.
 - D.* No postocular spine or tooth.
 - E.* Chelipeds not much elongated, palms inflated. Rostrum emarginate *Æpinus*
 - E'.* Chelipeds much elongated, with palms long and slender. Rostrum simple *Erileptus*
 - D'.* A postocular spine or tooth.
 - E.* Eyes long and slender *Arachnopsis*
 - E'.* Eyes not long and slender.
 - F.* Inner crest of basal antennal joint very prominent and projecting downward at right angles to the outer crest.
 - G.* Postocular tooth pointing forward.
 - H.* Postocular tooth fitting close to the eye *Dasygyius*
 - H'.* Postocular tooth not fitting close to the eye *Inachoides*
 - G'.* Postocular tooth pointing outward
 - Collodes*
 - F'.* Inner crest of basal antennal joint, when present, not projecting downward at right angles to the outer crest.
 - G.* Rostrum simple *Anasimus*
 - G'.* Rostrum bifid.
 - H.* Spine of basal antennal joint not advanced to the line of the front.

Hepatic region approximating the
eye, its anterior margin transverse

Batrachonotus

H'. Spine of basal antennal joint advanced
to the line of the front or nearly so.
Hepatic region distant from the
eye, its anterior margin oblique

Euprognatha

C'. Rostrum composed of two long spines Oregonia

A'. Basal joint of antennæ not extremely slender, often very broad. Eyes
with orbits, or capable of concealment.

B. Basal joint of antennæ truncate-triangular. Eyes without true
orbits; eyestalks very short, either concealed beneath a supra-
ocular spine or sunk in the sides of a huge beak-like rostrum.

C. Antennæ concealed beneath the rostrum.

D. Rostrum formed of two long contiguous horns

Sphenocarcinus

D'. Rostrum not formed of two long contiguous horns.

E. Eyes immovable Mocosoia

E'. Eyes movable Epialtus

C'. Antennæ not concealed beneath the rostrum.

D. Entire lateral portion of carapace wing-like. Carapace
smooth or nearly so Mimulus

D'. Carapace with two large lobes or teeth on each side.

Carapace tuberculate Pugettia

B'. Basal joint of antennæ broad, usually either extensively produced
outward or, often, with one or two distal spines. Eyes with
orbits.

C. Orbits with a large, blunt, cupped postocular process into
which the eye is retractile, but is not completely concealed.
Eyestalks short.

D. No preocular spine.

E. Meral joints of ambulatory legs flattened.

F. Carapace nearly as broad as long; surface
uneven Chionæcetes

F'. Carapace much longer than broad; surface
smooth Pelia

E'. Meral joints of ambulatory legs subcylindrical

Hyas

D'. A preocular spine.

E. Ambulatory legs armed with spines . . . Nibilia

E'. Ambulatory legs not armed with spines.

F. Basal joint of antenna deeply concave; second
and third joints flattened, with thin, broad,
lateral expansions Scyra

- F'*. Basal joint of antenna not deeply concave; second and third joints not broadly expanded.
G. Rostral horns long and slender Chorilia
G'. Rostral horns not long and slender.
H. Basal antennal joint narrowing distally Rhodia
H'. Basal antennal joint not narrowing distally Loxorhynchus
- C*. Orbits complete, often tubular, completely concealing the retracted eye.
- D*. Meral joints of ambulatory legs with very broad laminate expansions Hemus
- D'*. Meral joints of ambulatory legs without laminate expansions.
- E*. Fingers spoon-shaped at tips.
F. Carapace suboblong or suboval. Orbits directed forward. First movable joint of antennæ broadly expanded. Legs unarmed
 Pitho
- F'*. Carapace subtriangular. Orbits directed obliquely forward. First movable joint of antennæ not broadly expanded. Legs spinous Mithrax
- E'*. Fingers acute at tips.
F. Orbits tubular, directed outward. Carapace subtriangular or oblong.
G. Carapace with lateral spines
 Stenocionops
G'. Carapace without lateral spines
 Macroceloma
- F'*. Orbits not tubular, directed obliquely forward. Carapace orbicular.
G. Basal joint of antennæ with two spines on the inferior margin of the orbit
 Cœlocerus
G'. Basal joint of antennæ without spines on the inferior margin of the orbit
 Libinia

THE SPECIES OF MAIIDÆ.

- Genus *Stenorynchus* Lamarck . . . *S. sagittarius* (Fabricius), *M(CH)SG*
 Genus *Metoporphaphis* Stimpson . . . *M. calcarata* (Say), *M(CH)SG*
 Genus *Podochela* Stimpson.

Key to Species.

A. Rostrum acute or spiniform.

B. Rostrum long-pointed, terminating in a slender spine

P. gracilipes Stimpson, *M(CH)SG*

B'. Rostrum short-pointed, not terminating in a spine.

C. A large postorbital tooth near the eye

P. lamelligera (Stimpson), *G*

C'. A small postorbital tubercle, remote from the eye

P. hemphillii (Lockington), *D*

A'. Rostrum not acute, but rounded.

B. Pterygostomian region with a laminate crest. Basal antennal joint with lateral crests laminate *P. riisei* Stimpson, *M(CH)G*

B'. Pterygostomian region with a tubercle. Basal antennal joint with lateral crests smooth and rounded *P. hypoglypha* (Stimpson), *G*

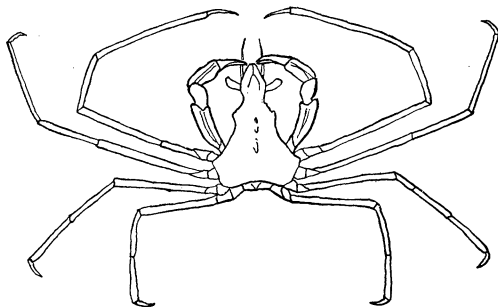


FIG. 1. — *Podocheila riisei*.

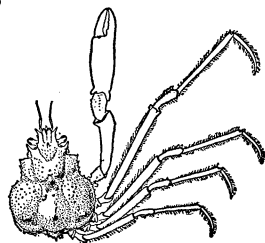


FIG. 2. — *Euprognatha rastellifera*.

Genus *Æpinus* Rathbun . . . *A. septemspinus* (A. Milne-Edwards), *G*

Genus *Erileptus* Rathbun . . . *E. spinosus* Rathbun, *D*

Genus *Arachnopsis* Stimpson . . . *A. filipes* Stimpson, *G*

Genus *Dasygyius* Rathbun . . . *D. tuberculatus* (Lockington), *D*

Genus *Inachoides* Milne-Edwards Lucas . *I. magdalenensis* Rathbun, *D*

Genus *Collodes* Stimpson.

Key to Species.

A. Carapace with median spines

C. depressus A. Milne-Edwards, *M(CH)SG*

A'. Carapace without median spines.

B. Interantennular spine advanced as far as the rostrum

C. leptocheles Rathbun, *G*

B'. Interantennular spine not advanced as far as the rostrum

C. robustus Smith, *M*

Genus *Anasimus* A. Milne-Edwards.

Key to Species.

A. Ambulatory legs more than twice the length of the carapace

A. latus Rathbun, *SG*

A'. Ambulatory legs less than twice the length of the carapace

A. rostratus Rathbun, *D*

Genus *Batrachonotus* Stimpson . . . *B. fragosus* Stimpson, *M(CH)G*

Genus *Euprognatha* Stimpson . . . *E. rastellifera* Stimpson, *MS*

Genus *Oregonia* Dana . . . *O. gracilis* Dana, *AP*

Genus *Sphenocarcinus* A. Milne-Edwards

S. corrosus A. Milne-Edwards, *M(CH)*

Genus *Mocosoia* Stimpson . . . *M. crebripunctata* Stimpson, *G*

Genus *Epialtus* Milne-Edwards.

Key to Species.

A. First tooth of the antero-lateral margin large and prominent.

B. No postocular tooth . . *E. bituberculatus* Milne-Edwards, *D*

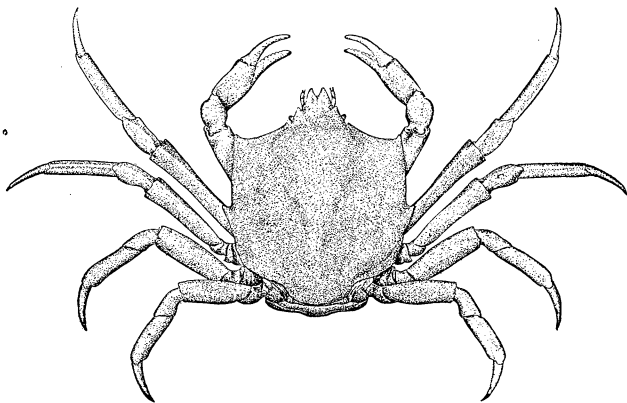


FIG. 3. — *Epialtus productus*.

B'. A postocular tooth . . . *E. productus* Randall, *APD*

A'. First tooth of the antero-lateral margin small, not prominent

E. nuttallii Randall, *D*

Genus *Mimulus* Stimpson . . . *M. foliatus* Stimpson, *APD*

Genus *Pugettia* Dana.

Key to Species.

A. Postorbital projection a triangular tooth.

B. Hepatic expansion very broad . . . *P. gracilis* Dana, *APD*¹

B'. Hepatic expansion narrow, transverse . . *P. richii* Dana, *AD*

¹ San Luis Obispo, California (Lockington).

A'. Postorbital projection an obtuse lobe *P. dalli* Rathbun, *D*
Genus *Chionæcetes* Krøyer.

Key to Species.

A. Carapace tuberculous; branchial regions flattened
C. opilio (O. Fabricius), *NA*

A'. Carapace spinous; branchial regions dilated
C. tanneri Rathbun,¹ *APD*

Genus *Pelia* Bell.

Key to Species.

A. Hands in male with margins tapering to the fingers, which have their edges meeting throughout . . . *P. pacifica* A. Milne-Edwards, *D*

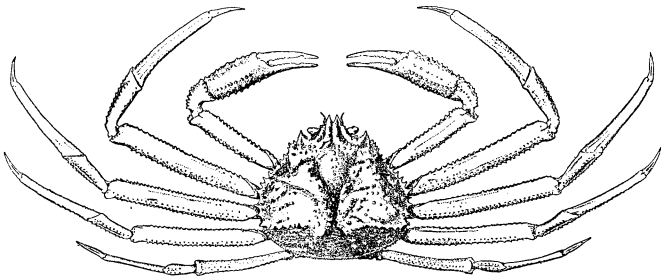


FIG. 4. — *Chionæcetes tanneri*.

A'. Hands in male with margins subparallel; fingers gaping at base
P. mutica (Gibbes), *MSG*
Genus *Hyas* Leach.

Key to Species.

A. Carapace subtriangular; hepatic region not dilated laterally. Basal antennal joint subtriangular *H. araneus* (Linnæus), *N*

A'. Carapace lyrate; hepatic region dilated laterally. Basal antennal joint with sides nearly parallel.

B. Posterior angle of hepatic projection rounded. Basal antennal joint without a large tubercle at the antero-external angle

H. coarctatus Leach, *NMA*

B'. Posterior angle of hepatic projection subacute. Basal antennal joint with a large tubercle at the antero-external angle

H. lyratus Dana, *AP*

Genus *Nibilia* A. Milne-Edwards

N. erinacea A. Milne-Edwards, *M(CH)G*

Genus *Scyra* Dana *S. acutifrons* Dana, *APD*

Genus *Chorilia* Dana *C. longipes* Dana, *APD*

¹ Only in exceptional cases has this species been found above the 100-fathom line.

B'. Divisions of rostrum long and sharp *M. acuticornis* Stimpson, *G*
Genus *Stenocionops* Leach.

Key to Species.

A. Carapace with strong median spines

S. spinosissimus (Saussure), *M(CH)*

A'. Carapace without strong median spines.

B. Carapace smooth *S. furcatus* (Olivier), *S*

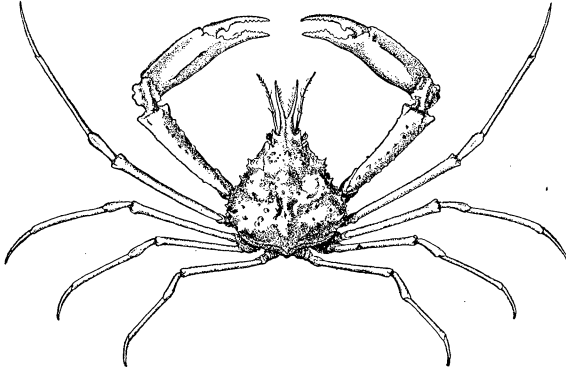


FIG. 6. — *Chorilia longipes*.

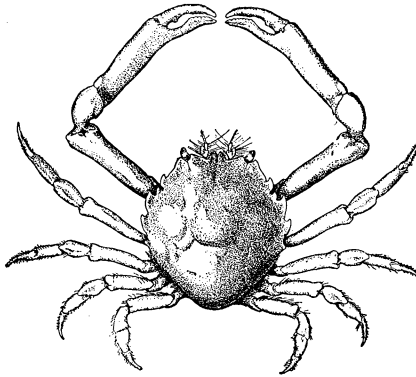


FIG. 7. — *Pitho anisodon*.

B'. Carapace tuberculous *S. furcatus cælatus* (A. Milne-Edwards), *G*
Genus *Macroceloma* Miers.

Key to Species.

A. Carapace with dorsal spines besides the epibranchial and posterior spines.

B. Rostrum strongly deflexed *M. septemspinosa* (Stimpson), *SG*

- B'*. Rostrum almost horizontal . . . *M. camptocercum* (Stimpson), *G*
A'. Carapace without dorsal spines except the epibranchial and posterior
 spines *M. trispinosum* (Latreille), *M(CH)G*
Genus *Cœlocerus* A. Milne-Edwards *C. grandis* Rathbun, *G*
Genus *Libinia* Leach.

Key to Species.

- A*. Carapace with lateral margin evenly rounded behind the rostrum.
B. Median spines six *L. dubia* Milne-Edwards, *MSG*
B'. Median spines nine *L. emarginata* Leach, *NMSG*
A'. Carapace distended at the hepatic regions *L. spinimana* Rathbun, *G*

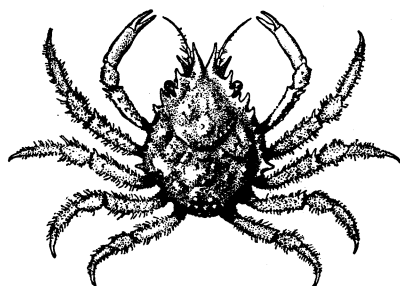


FIG. 8. — *Mithrax acuticornis*.

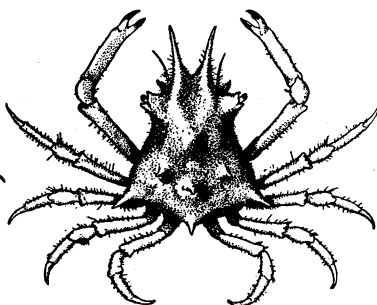


FIG. 9. — *Macroceloma camptocercum*.

KEY TO THE GENERA OF THE FAMILY PARTHENOPIDÆ.

- A*. Carapace not laterally expanded.
B. Carapace tuberculate.
C. Carapace triangular, convex. Pterygostomian and subhepatic
 regions not deeply excavated to form passages to the effer-
 ent branchial apertures *Lambrus*
C'. Carapace subrhomboidal, depressed. Pterygostomian and
 subhepatic regions excavated, this excavation forming,
 when the chelipeds are retracted, passages to the efferent
 branchial apertures *Platylambrus*
B'. Carapace smooth *Solenolambrus*
A'. Carapace more or less expanded to form a vault in which the ambu-
 latory legs are concealed.
B. Carapace greatly expanded, both laterally and posteriorly
Cryptopodia
B'. Carapace expanded laterally, but not posteriorly . *Heterocrypta*

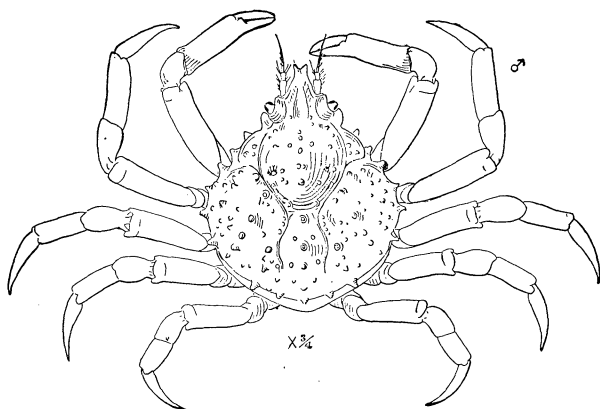
THE SPECIES OF PARTHENOPIDÆ.¹

Genus Lambrus Leach.

Key to Species.

A. Carapace subtriangular, with lateral angles.

B. Protuberances of the carapace spiniform, subacute

L. pourtalesii Stimpson, *MS*B'. Protuberances of the carapace tuberculiform, broadly rounded at the top *L. fraterculus* Stimpson, *M(CH)G*FIG. 10. — *Libinia emarginata*.

A'. Carapace posteriorly rounded, without lateral angles

L. agonus Stimpson, *G*Genus Platylambrus Stimpson . *P. serratus* (Milne-Edwards), *M(CH)G*

Genus Solenolambrus Stimpson.

Key to Species.

A. Gastric and cardiac regions with angular ridges

S. decemspinus Rathbun, *G*

A'. Gastric and cardiac regions without angular ridges

S. tenellus Stimpson, *G*

Genus Cryptopodia Milne-Edwards.

¹ California is given by Owen as the type locality of *Leiolambrus punctatissimus*. As it has not since been recorded north of Lower California, which was known as "California" in 1839, it is inferred that the species does not occur in the United States.

Key to Species.

- A.* Posterior margin of carapace straight or nearly so. Cardiac region faintly indicated *C. concava* Stimpson, *G*
A'. Posterior margin of carapace sinuous. Cardiac region protuberant
C. occidentalis Dana, *PD*
 Genus *Heterocrypta* Stimpson *H. granulata* (Gibbes), *SGM*

TRIBE OXYSTOMATA OR LEUCOSOIDEA.

Carapace with the antero-lateral margins arcuate or orbiculate; sometimes subglobose or more or less oblong, with subparallel margins. Epistome much reduced. Buccal frame more or less triangular, produced and narrowed forward, with the margins anteriorly convergent. Six to nine

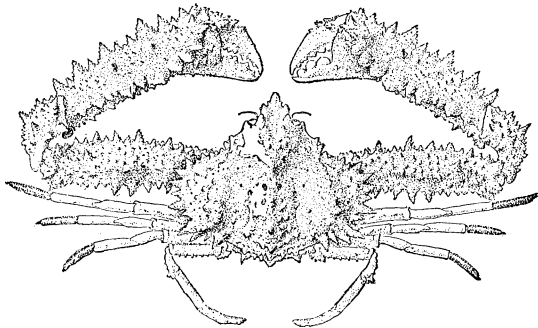


FIG. 11. — *Lambrus pourtalesii*.

pairs of branchiæ. Efferent channels opening at the middle of the endostome, which is produced forwards. The afferent channels open either behind the pterygostomian regions and in front of the chelipeds, or at the antero-lateral angles of the palate. First antennæ folded longitudinally or obliquely. The genital organs of the male are exerted, either from the bases of the fifth pair of legs, or from the surface of the sternal plastron.

KEY TO THE FAMILIES OF THE TRIBE OXYSTOMATA.

- A.* Legs normal in size and position.
B. Maxillipeds not closing the buccal cavern; their palp always exposed . . . CALAPPIDÆ Milne-Edwards, de Haan, White
B'. Maxillipeds closing the buccal cavern; the palp hidden.
C. Afferent branchial openings in front of the bases of the chelipeds. MATUTIDÆ M'Leay
C'. Afferent branchial openings on either side of the endostome
 LEUCOSIIDÆ Leach

- A'*. Last two pairs of legs much reduced in size, and having a peculiar position in the dorsal plane of the body

DORIPPIDÆ Milne-Edwards, White

KEY TO THE GENERA OF THE FAMILY CALAPPIDÆ.

- A*. Antero-lateral margin continuous with the postero-lateral.
B. Carapace broadest in its posterior half *Calappa*
B'. Carapace broadest in its anterior half *Acanthocarpus*
A'. Antero- and postero-lateral margins meeting at an angle armed with a stout spine *Platymera*

THE SPECIES OF CALAPPIDÆ.

Genus *Calappa* Fabricius.

Key to Species.

- A*. Teeth of the posterior margin of the carapace broad and shallow
C. flammea (Herbst), *MSG*
A'. Median pair of teeth of the posterior margin long and slender
C. sulcata Rathbun, *M(CH)G*

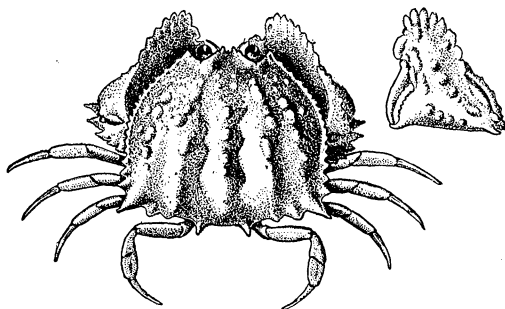


FIG. 12. — *Calappa sulcata*.

- Genus *Acanthocarpus* Stimpson *A. alexandri* Stimpson, *MG*
 Genus *Platymera* Milne-Edwards *P. gaudichaudii* Milne-Edwards, *PD*

KEY TO THE GENERA OF THE FAMILY MATUTIDÆ.

- A*. Carapace much broader than long; front not produced; surface evenly convex *Hepatus*
A'. Carapace nearly as long as broad; front considerably produced; surface very uneven, nodulose *Osachila*

THE SPECIES OF MATUTIDÆ.

Genus *Hepatus* Latreille.*Key to Species.*

- A.* Carapace marked with large patches of color, margined by darker lines. Length of penultimate segment of abdomen of male two-thirds its proximal width . . . *H. epheliticus* (Linnæus), *MSG*
A'. Carapace marked with transverse lines of small, dark spots. Length of penultimate segment of abdomen of male three-fourths its proximal width *H. princeps* (Herbst), *S*
 Genus *Osachila* Stimpson *O. tuberosa* Stimpson, *G*

KEY TO THE GENERA OF THE FAMILY LEUCOSIIDÆ.

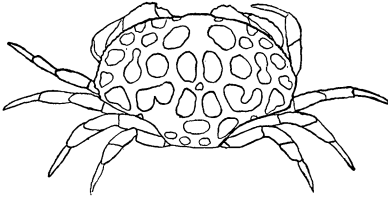
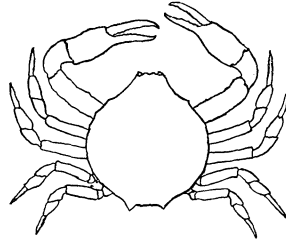
- A.* Merus of external maxillipeds more than half the length of the ischium measured along the inner border. Fingers stout, gradually narrowing from base to tip.
B. Little or no space between the edge of the floor of the orbit and the free edge of the buccal cavern.
C. Intestinal region without a spine. Merus of external maxillipeds nearly as long as the ischium measured along the inner border *Philyra*
C'. Intestinal region with a long spine. Merus of external maxillipeds much shorter than the ischium measured along the inner border *Persephona*
B'. A considerable space between the edge of the lower wall of the orbit and the free edge of the buccal cavern.
C. Carapace almost circular and globular *Randallia*
C'. Carapace polygonal; surface very uneven . . . *Lithadia*
A'. Merus of external maxillipeds half or less than half the length of the ischium measured along the inner border. Fingers slender, almost of the same diameter from base to near tip.
B. Fingers moving in a vertical plane. Pterygostomian channels projecting considerably beyond the orbits . . . *Iliacantha*
B'. Fingers moving in a horizontal plane. Pterygostomian channels not projecting beyond the orbits *Myropsis*

THE SPECIES OF LEUCOSIIDÆ.

- Genus *Philyra* Leach *P. pisum* de Haan, *P*
 Genus *Persephona* Leach *P. punctata* (Linnæus), *M(CH)SG*
 Genus *Randallia* Stimpson *R. ornata* (Randall), *PD*
 Genus *Lithadia* Bell.

Key to Species.

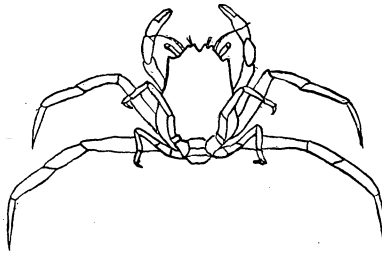
- A.* A narrow bridge between two cavities connects the cardiac and branchial regions *L. pontifera* Stimpson, *M(CH)*
A'. No bridge connects the cardiac and branchial regions.

FIG. 13. — *Hepatus epheliticus*.FIG. 14. — *Randallia ornata*.

- B.* A transverse ridge between the large branchial protuberance and the lateral margin *L. cariosa* Stimpson, *M(CH)G*
B'. A small circular protuberance between the large branchial protuberance and the lateral margin *L. cadaverosa* Stimpson, *G*
 Genus *Iliacantha* Stimpson *I. subglobosa* Stimpson, *M(CH)G*
 Genus *Myropsis* Stimpson *M. quinquespinosa* Stimpson, *G*

KEY TO THE GÉNERA OF THE FAMILY DORIPPIDÆ.

- A.* The external maxillipeds leave all the anterior part of the buccal cavern uncovered *Ethusa*
A'. The external maxillipeds cover the buccal cavern *Cyclodorippe*

FIG. 15. — *Ethusa mascarone*.

THE SPECIES OF DORIPPIDÆ.

Genus *Ethusa* Roux.*Key to Species.*

- A.* Eyestalks long, extending laterally beyond the postorbital spine
 E. mascarone americana (A. Milne-Edwards), *M(CH)G*
A'. Eyestalks short, directed forward.

B. Dactyli of second and third pairs of legs broad, flattened

E. microphthalmia Smith, *M*

B'. Dactyli of second and third pairs of legs slender, not flattened

E. tenuipes Rathbun, *G*

Genus *Cyclodorippe* A. Milne-Edwards.

Key to Species.

A. Carapace convex. No hepatic tooth *C. nitida* A. Milne-Edwards,¹*D*

A'. Carapace flattened. A hepatic tooth . . . *C. plana* (*sp. nov.*), *G*

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